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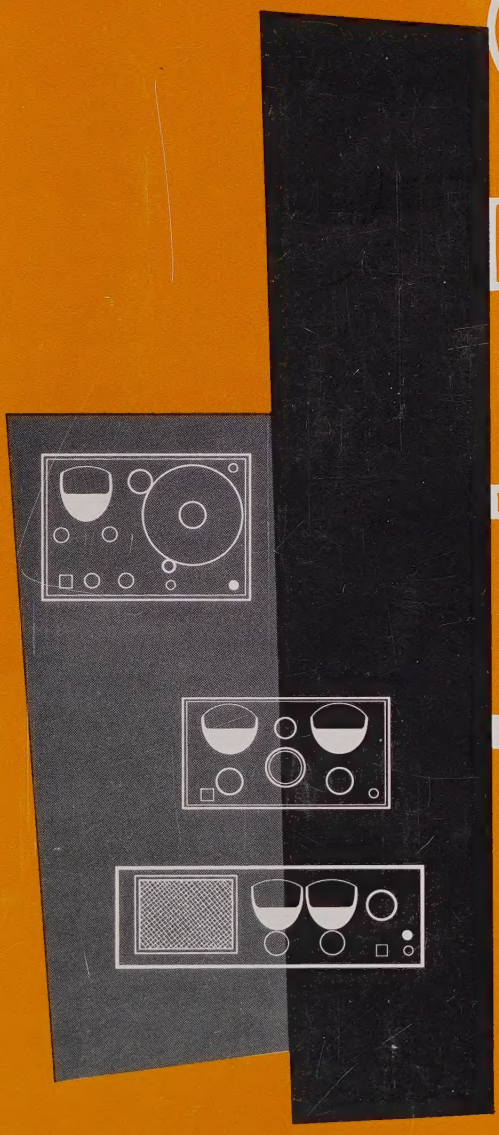
INSTRUCTION MANUAL

MODEL 122

REGULATED POWER SUPPLY

FOR SERIAL # 132



QTL

- REGULATED POWER SUPPLIES
- ELECTRONIC INSTRUMENTS

Quan-Tech

LABORATORIES INC.

BOONTON, N. J.

INSTRUCTION MANUAL

MODEL 122

REGULATED POWER SUPPLY

FOR SERIAL # 132

QUAN-TECH LABORATORIES

60 PARSIPPANY BLVD. BOONTON, NEW JERSEY

TELEPHONE DE 4-8500

REGULATED POWER SUPPLY

MODEL 122

GENERAL

The Quan-Tech Regulated Power Supply Model 122 is a solid-state low voltage DC power supply featuring extremely close regulation and low ripple content. Meters are provided to monitor both output voltage and current. All-electronic circuitry protects the supply against overload or short-circuit and automatically limits the dissipation in the transistors to a safe value.

SPECIFICATIONS

Output Voltage Range: 0.1 to 36 Volts DC

Output Current Range: 0 to 3 Amperes DC

Regulation: Less than .01% or .003 volts whichever is greater (from no load to full load or from 105 V to 125 V line)

Ripple: Less than 500 microvolts RMS

Internal Impedance: Less than .001 ohms in series with 1 microhenry

Transient Response: NL to FL, recovers to within .003 volt in less than 50 microseconds. FL to NL, recovers to within .03 volt in less than 50 microseconds, recovers to within .003 volt in less than 1 millisecond.

Overload Protection: An electronic circuit automatically limits overload and short-circuit current to a safe value. The supply recovers immediately upon the removal of the overload or short-circuit.

Output Terminals: Binding posts, isolated from chassis, are located on the front panel. An output terminal strip and provision for remote error sensing are available at the rear of the chassis.

Power Input: 105-125 volts, 50-60 cycles, 125 watts.

Dimensions: Standard relay rack panel 3½" high x 19" wide, 15" deep overall.

Weight: 23 lbs.

OPERATION

1. Place the Model 122 so that it has ventilation at the back where the heat radiators are located. Although the instrument will deliver full rated power at 40°C (104°F) it should preferably not be placed on top of other equipment that liberates a large amount of heat.

2. Plug the power cord into a source of 105-125 volt, 50-60 cycle, AC power. Turn the power switch to ON and all three knobs fully clockwise. The voltmeter should read slightly over 36 volts.

3. Turn both voltage control knobs fully counter-clockwise and short-circuit the output terminals. Advance the main control knob clockwise. The ammeter should rapidly go off-scale and then gradually drop back to approximately 1/2 ampere at full clockwise rotation. Turn the MAXIMUM CURRENT knob fully counter-clockwise and repeat the above. The output current should rise rapidly to approximately 1 ampere and then fall back. The power supply may now be connected to the load.

4. Under overload conditions electronic circuitry in the Model 122 will limit the maximum overload (or short circuit) current to about 30 to 50% above full rated output current with the MAXIMUM CURRENT control in the full clockwise position. If it is required to limit the maximum overload current to some value less than 150% of full rated current, the following procedure should be followed:

    a) Turn the VOLTAGE and VERNIER VOLTAGE knobs fully counter-clockwise, turn the MAXIMUM CURRENT control fully clockwise, and short-circuit the output terminals.

    b) Advance one of the voltage control knobs clockwise (if necessary) until the ammeter reads slightly more than 3 amperes.

    c) The MAXIMUM CURRENT control may now be set to any value from 3 amperes down to about 1 ampere, however, it must always be 50% greater than the desired load current.

MAINTENANCE AND REPAIR

1. The interior of the power supply may be reached by removing the eight screws that hold the top on the case.

2. Components on the main printed circuit may be inspected by removing the five mounting screws.

MAINTENANCE AND REPAIR (Cont'd)

3. The five screws holding the rear printed circuit also serve as the connections to the collectors of the five pass transistors. The supply should not be operated unless all five screws are in place and tight.

4. The majority of the components in this instrument are standard commercial parts, available at most suppliers. Special replacement parts can be obtained from Quan-Tech Laboratories.

5. In replacing components on the printed circuit board, the iron should be just hot enough to melt the solder quickly. Avoid prolonged heating and pressure that might push the copper away from the board while hot.

CIRCUITRY

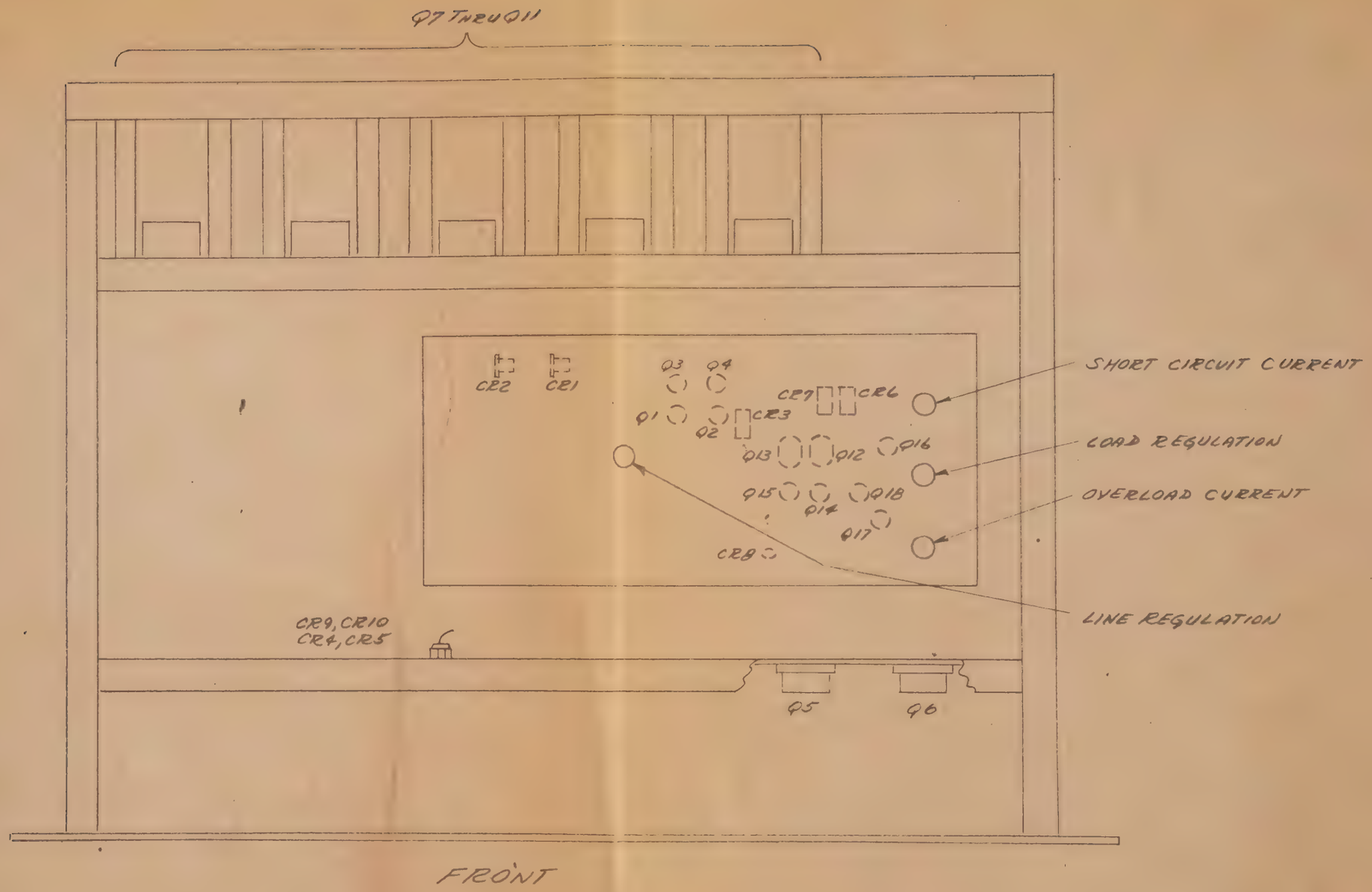
The Power Supply circuit consists of the following principal parts:

1. An extremely stable and closely regulated reference and bias supply using a temperature compensated Zener voltage reference and differential amplifiers to minimize temperature drift. (CR1 through CR3, Q1 through Q5.)

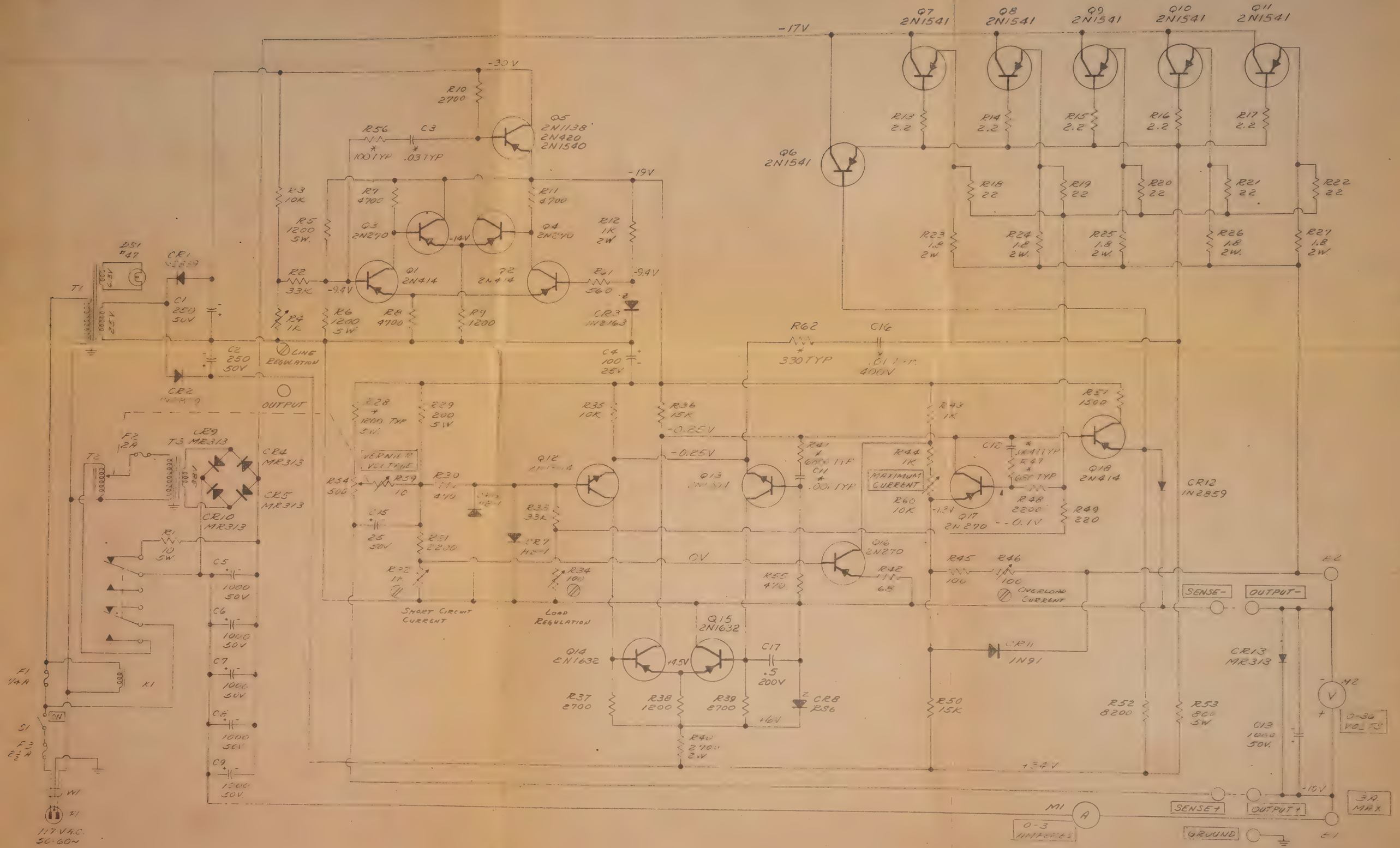
2. A five stage main transistor regulator with differential amplifiers in the first two stages to minimize temperature drift. (Q6 through Q15, Q18.)

3. A voltage determining rheostat ganged to the variable autotransformer which drives the main silicon rectifier. (CR4, CR5, CR9, CR10.)

4. An electronic circuit that limits the maximum output current to about 130 - 150% of the rated full load current. This circuit also reduces the output current under severe overload or short-circuit conditions to prevent excessive dissipation in the pass transistors. (Q16, Q17.)



MODEL 122
RECTIFIER & TRANSISTOR LOCATIONS.



NOTES:
1. TYPICAL VOLTAGES MEASURED FROM NEGATIVE OUTPUT TERMINAL.
2. LINE VOLTAGE 117V. OUTPUT SET TO 10 VOLTS, NO LOAD WITH VERNIER VOLTAGE FULL CCW AND MAXIMUM CURRENT FULL CW.

LEGEND

K = 1,000
= SCREW DRIVER ADJUSTMENT
= FRONT PANEL CONTROL.
= FRONT PANEL CONTROL
UNLESS OTHERWISE SPECIFIED:-
ALL RESISTANCES IN OHMS
ALL RESISTORS ½ WATT
ALL CAPACITANCES IN MICROFARADS

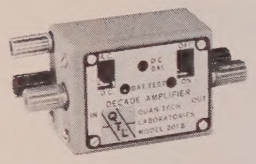
* = FACTORY SELECT

SCHEMATIC
POWER SUPPLY
MODEL 122

C-1468-M

eem File System Sec. 2900
electronic engineers master

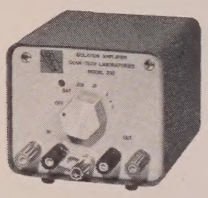
QUAN-TECH INSTRUMENTS



Model 201-B DC-Coupled Decade Amplifier

Highly compact and fully self-contained, the Model 201-B is a stable ac and dc amplifier providing a controlled gain of 10 over a frequency range of dc to 1 MC (±0.5db). Built in battery-condition test indicator. Two or more Model 201-B's may be plugged together in series for greater gain.

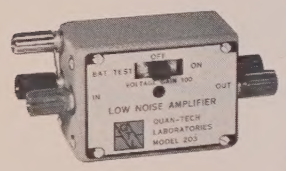
Price: $95.00



Model 202 Isolation Amplifier

Provides dc and capacitive isolation between input and output terminal pairs. When used with voltmeter, oscilloscopes etc., permits accurate, safe, off-ground measurements. Frequency response: 30 cps to 100 kc (±0.5db). Voltage gain, 1, 0.1, 0.01, 0.001. Battery operated; fully self-contained. Built-in battery condition indicator. Input-to-output effective capacitance, less than 4 mmf. In-phase signal rejection 5000/1 at 100 kc and 10k ohm generator.

Price: $155.00



Model 203 Low-Noise Amplifier

Compact, very low-noise ac amplifier with controlled gain of 100. Frequency response flat from 30 cps to 100 kc (±0.5db); down 3 db at 500 kc. Equiv. noise, full bandwidth, 5 μv RMS, input shorted. Narrow band noise approx. 0.005 μv/cycle above 1 kc. Battery operated; fully self-contained; built in battery condition indicator.

Accessory Adaptor plugs:—See Model 201-B above.

Price: $125.00

Model 317 Amplitude Distribution Analyzer —

Establishes the amplitude-probability distribution of a random signal; for example, to determine threshold requirements, false alarm probabilities, etc. Frequency range: 5 cps to 0.5 mc; Amplitude ranges: 100%, 10% and 1% full scale accuracy. Output to drive counter at front panel. Size 8½"(h) x 5" (w) x 6¾"(d).

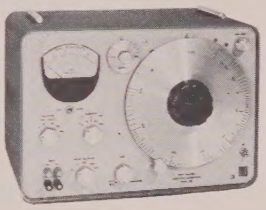
Price: will advise

Model 301 AC Microammeter

Highly versatile ac current meter providing low input impedance, very high sensitivity, and isolation from ground for low-level current measurements without disturbing circuit under test. Signal output permits display of current waveforms on oscilloscope. Ideal for transistor or magnetic circuit analysis. Sensitivity: With insertion probe, 3 ua to 100 ma full scale; with clamp-on probe, 300 ua to 100 ma, full scale. With 10-amp clamp-on probe (supplied separately) 300 ua to 10 amps.

Price: $290.00

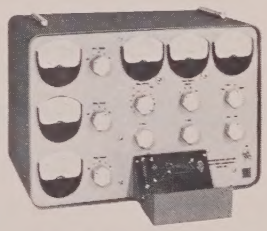
Accessory 10-amp clamp-on probe and connector. **Price: $ 65.00**



Model 303 Wave and Noise Spectrum Analyzer

Designed especially for use in ultrasonics and noise spectrum analysis. Selection of four constant bandwidths; i.e., 10 and 30 cycles (round top), 100 cps and 1 kc (flat top). Frequency range 30 cps to 100 kc, ±300 cps vernier. Sensitivity: 100 μv to 300 v full scale. Analog outputs provided for external monitoring. Sensitivity of 1 μv full scale with Quan-Tech Model 203 amplifier.

Price: $1300.00



Model 310 Transistor Noise Analyzer

Provides simultaneous analysis of transistor noise at three frequencies. System automatically corrects for variations in transistor gain. Beta, Icbo and Iebo are also included—providing measurements of essential transistor characteristics in one instrument.

Price: $1800.00

Model 315 Resistor Noise Test Set

For precise, quantitative measurement of noise generated as a result of current passing through a resistor. Tests any resistor from 100 ohms to 22 megohms; conforms to recommended specifications of National Bureau of Standards for resistor noise measurements. Tests diodes and other two-terminal networks as well. Outputs provided for external monitoring or for data processing.

Price: $1550.00

Quan-Tech
LABORATORIES, INC.
BOONTON, NEW JERSEY
Phone: (Code 201) DEerfield 4-8500

We welcome requests for information regarding specific applications of Quan-Tech instruments, amplifiers and other products.

Prices and specifications are subject to change without notice. Prices noted are f.o.b. Boonton, N.J., USA.

QUAN-TECH
POWER SUPPLIES

Transistorized Power Supplies

A series of compact, lightweight power supplies featuring high regulation and voltage metering. The Model 104B (shown) also includes current metering. Regulation for models 101 and 105, 0.25%; the remaining models, 0.1% regulation. Electronic overload and short-circuit protection.

Model 101	0- 8 VDC, 0-2 amps	Price: $175.00
Model 102	0-14 VDC, 0-1 amp	Price: 165.00
Model 103	0-30 VDC, 0-½ amp	Price: 165.00
Model 104B	0-50 VDC, 0-1 amp	Price: 365.00
Model 105	0-50 VDC, 0-¼ amp	Price: 185.00
Model 108	0-32 VDC, 0-½ amp	Price: will advise

100 SERIES

Model 104B

Precision Power Supplies

The 120 Series of precision, solid-state power supplies is characterized by 0.01% regulation. Ripple is less than 500 μvolts, rms. Outstanding features are output voltage and current metering, overload and short circuit protection circuitry, preadjustment of current levels, and remote error sensing.

Model 121	0.1-15 VDC, 0-5 amps	Price: $435.00
Model 122	0.1-36 VDC, 0-3 amps	Price: 445.00
Model 123	0.1-50 VDC, 0-2 amps	Price: 460.00
Model 124	0.1-50 VDC, 0-5 amps	Price: 560.00

120 SERIES

Model 124

Constant Current Supply

Provides constant output current variable over a wide range, independent of voltage across the load. Ideal for transistor or diode testing, potentiometer noise measurements, strain gage applications, etc.

Price: $290.00

OUTPUT: 0.5 to 500 ma. DC in three ranges: 0.5 to 5 ma; 5 to 50 ma; and 50 to 500 ma. Maximum output 20 volts.
POWER INPUT. 105-125 volts, 50-60 cycles, 35 watts.

MODEL 151B

Modular Power Supplies

The 170 Series are extremely compact, solid-state power supplies offering excellent operating characteristics *at unusually low cost.* All models are available in 3 configurations: Suffix B for bench use, Suffix C with all connections through octal plug, and Suffix T with terminal strip. All models regulated to less than 3 millivolts, line or load. Ripple is less than 250 μvolts, rms.

Model	Output Voltage	Output Current	Dimensions	Price
170	10-32	0.25a	3"(h)x4"(w)x5"(d)	$ 98.00
171	10-32	0.50a	3.5"(h)x5"(w)x5.5"(d)	123.00
172	0-32	0.20a	3"(h)x4"(w)x5"(d)	105.00
174	0-32	0.40a	3.5"(h)x5"(w)x5.5"(d)	129.00

170 SERIES

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In addition to the above standard units, Quan-Tech Laboratories produces custom-designed power supplies for specialized applications. We invite the opportunity to offer consultation on your special power supply problems. Address inquiries to the Power Supply Division, at the address below.

The Instrument Division of Quan-Tech Laboratories produces equipment for the measurement and analysis of component and system noise, as well as specialized amplifiers for instrumentation. For details, see section 2900.

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